

TECHNICAL EVALUATIONS

(IPT APPROACH)

-A REFRESHER-

INTRODUCTION

- WHY TECHNICAL EVALUATION TRAINING IS IMPORTANT/VALUE ADDED
- PARTICIPATION & COMMENTS ARE ENCOURAGED
- READ THE SLIDES AND FEEL FREE TO TAKE NOTES

Technical Evaluations Agenda

- DOD “Business 101” The Market Place
- IPT Acquisition Process
- Keys to Successful Tech Evaluation
- Negotiation
- IPT Lead Tips
- Summary

MARKETPLACE

Competition Continuum

Competitive Competitive

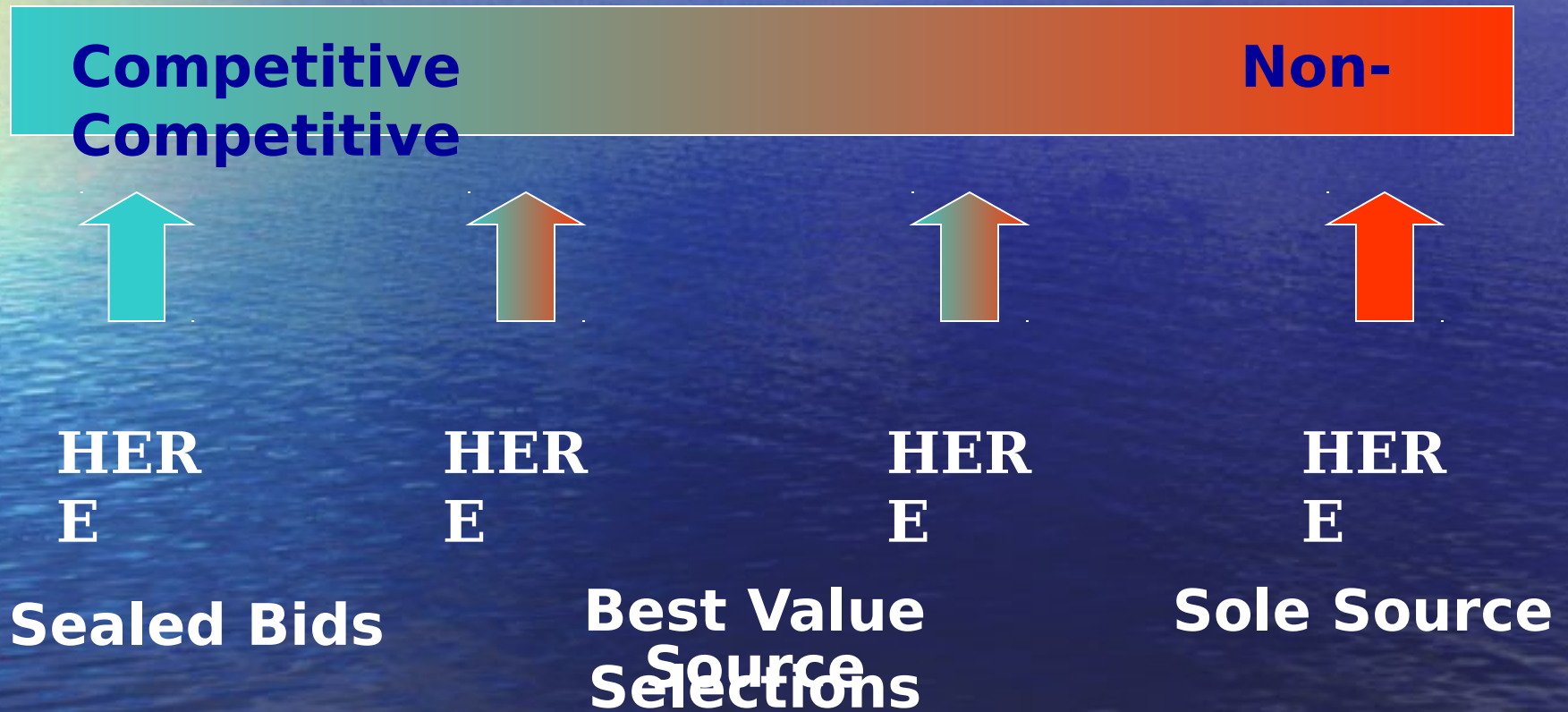
Many Buyers
Many Sellers
Neither Buyer nor Seller
Has an Advantage
Price Established
by Marketplace

Non-

One Buyer or
One Seller
Buyer or Seller
Has Advantage
Price Established
by
Buyer or Seller

Marketplace

How Does DOD Buy?



DOD Marketplace

Understanding the Seller

- Like Most Companies, Defense Contractors Are Generally For-profit Corporations.
- A Corporate Goal Is to Maximize Profits for Its Shareholders.
- Profit Is the Difference Between the *Price* of an Item and the *Cost* of the Item.
- Therefore Profits Can Be Increased in Two Ways:
 - *Increasing* the *Price* to the Buyer
 - *Reducing* the *Cost* to the Seller

Government Regulations

Why?

- In the Absence of a Profit/Loss Benchmark, the Government Has Established Regulations to Ensure It Acts As a Prudent Buyer With the Taxpayer's Money.
- Regulations Vary between Competitive and Sole Source to Simulate the Marketplace.
- Protects Both the Buyer and Seller.

Government Pricing Policy

Per FAR 15.402:

Contracting Officers Shall --

- (a) Purchase Supplies and Services From Responsible Sources at ***Fair and Reasonable Prices.***

This Is the Basis for All Other Pricing Related Regulations and Policies.

Government Pricing Policy ENFORCEMENT

- **WE ARE THE STEWARDS OF
THE TAXPAYER DOLLARS**
- **EVERY DOLLAR SAVED ON THE
INSTANT NEGOTIATION CAN BE
APPLIED TO ADDITIONAL
CAPABILITIES**

The (IPT) Acquisition Process

REQUIREMENT/NEED

SPECIFICATION

STATEMENT OF WORK/STATEMENT OF OBJECTIVES

REQ FOR PROPOSAL

PROPOSAL PREPARATION/EVALUATION (BIG FACT-FINDING)

PROPOSAL SUBMISSION/EVALUATION (LITTLE FACT-FINDING)

NEGOTIATIONS

CLEARANCE

CONTRACT AWARD

Budget versus Proposal

IPT Process

- Why would the proposal be different from the budget?
 - Different Snapshot of time
 - Different Assumptions
 - Different Technical Approaches
 - Different Sets of Data/Info
 - Different Estimating Techniques
 - Different Philosophy
- Budget developed by Government
- Proposal developed by Contractor

**JUST BECAUSE WE HAVE THE BUDGET
ESN'T MEAN WE HAVE TO SPEND IT ALL ON ONE EFFO**

Why Are Quality Tech Evals So Important?

- A Good Technical Eval assures we don't overpay for the Contract Requirements.
- Effective Program Planning Tool
 - Assures Program Requirements are Understood and Proposed
 - Detailed Cost Proposal is Most Comprehensive Plan a Program will have
 - At no other time in acquisition cycle will you have more leverage to assure proper planning

Successful Tech Eval - Keys

Organization

Preparation

Communication

Analysis

Consolidation

Documentation

FACTFINDING

-

Organization Responsibilities

- Know the SOW/SOO
- Individual Evaluators
 - Good fact-finding/evaluation of all assigned sections
- Team Leads (Example: Integration)
 - Coordination of individual evaluations within area
 - Become Familiar With Contractor's Organizational Structure and Estimating System
 - Ensure all BOE's within his/her area are evaluated
- Tech Eval Leader (Example: Program Manager)
 - Coordination of evaluations for all areas
 - Ensure all areas are evaluated
 - Know the Cost Element Summary
 - Resolve Problems

IPT Tech Evals, Fact-Finding Preparation

- Read and Understand Government Requirements (SOW/SOO)
- Communicate Basis of Estimate (BOE) “Requirements” to the Contractor
- Review Available, Relevant Data
 - Review Task Structure in Similar Proposal
 - Review Estimating Techniques/factors
 - Review Results of Previous Negotiations
 - Get Actuals, if applicable
 - Review Previous Similar Actions
- Will This Effort Be Concurrent With Other Efforts?
 - Sharing of Support/mgmt Tasks?
 - Combined Reviews/ Trips Etc.
- Review BOE’s or Be Prepared to Jointly Develop BOE’s
- Develop the Questions

COMMUNICATION...A KEY COMPONENT

- ✓ Fact-finding questions:
 - Be specific (general questions = general answers)
 - Don't accept inadequate answers
- ✓ Be aware of issues that may affect other disciplines and notify Tech Eval leader
- ✓ Notify team leader promptly of problems
- ✓ Keep relationships professional, don't make decisions based on personal relationships that have developed over time
- ✓ Don't answer questions for the contractor
- ✓ Clearly document any agreements on tasks
 - ✓ Agreements aren't required, goal = understanding

Analysis is

- ✓ ADDRESS KEY ISSUES

- ✓ WHAT ARE MAJOR COST DRIVERS?
- ✓ WHERE IS RISK?

- ✓ UNDERLYING TECH EVAL QUESTION IS:

“HOW MANY HOURS DOES IT TAKE TO DO THIS TASK?”

NOT:

“HOW DOES THIS SYSTEM WORK?/ HOW WILL IT PERFORM?”

Fact-Finding Principles

- Find the Facts - It is not fair to the Contractor, the IPT, or the Taxpayer to evaluate a proposal without knowing the facts behind the estimate.
- The Govt has a right to know the *how* and *why* of each task estimate. (*Attitude*)
- Opposite of the Constitution - The estimate is *Bad* until they prove it *Good*. (*Attitude*)
- The key element in Fact-Finding is knowing what questions to ask.
- If the right questions are asked and answered, the evaluation will be easier and a better product will result.

IPT Fact-Finding Common Misconception

- “All Hours Must Be Agreed to During Fact-Finding”

Not true.

Government evaluators should not be forced into making agreements they are not comfortable with during fact-finding – especially when there is real contention regarding the BOE.

Purpose is to reach **understanding**, even if agreement cannot be made on every point

Areas not agreed to can be included in **negotiations**.
Generally, there will be some negotiation regarding profit.

IPT Fact-Finding Process

- Convert SOO/ SOW to Lower Level Tasks that Should Be Estimated. (Ktr / Govt)
- Identify Appropriate Estimating Techniques. (Ktr / Govt)
- Identify Key Estimating Parameters: (Ktr / Govt)
 - E.G. Number of Drawings, Lines of Code, Etc
- Build Basis of Estimate: Hours & Rationale (Ktr)
- Continue Evaluation (Govt)
- Understanding of Govt / Ktr Positions (Ktr / Govt)
 - Total Agreement on All Elements May Not Be Possible but There Should Be No Surprises in Proposal / Negotiations

Some Tech Eval Questions

- A) Is the offeror's overall approach and attention to requirements sound? (Explain) If the proposal includes exceptions to or revisions of the Statement Of Work (SOW), are these changes acceptable?
- B) Are the number of labor hours and mix of the labor hours for each individual labor category reasonable for the given tasks? Are they consistent with what you recommend? Explain with direct comparison with similar effort.
- C) Are the allocation of labor hours to the subcontractor reasonable for the effort? Is this allocation to the best advantage of the program? (Explain) What information do have about the sub-contractors and their past performance? _
- D) Is the schedule proposed for accomplishing the work consistent with government requirements? If not, is their schedule acceptable?
- E) Are sound management controls present? (Explain)

Tech Eval Questions Cont.

- F) Is the proposed travel required for the performance of the effort when considering locations, purpose of the trips, number of personnel per trip, and the duration of each trip? What is the basis of your determination? What is your estimated percentage of trips to be no-notice or short notice requiring the payment of full airline fare instead of a discount fare?
- G) Are Other Direct Costs (ODCs) (including consultants), facilities, and computers or computer time consistent with the proposed tasks? (Explain)
- H) Are material types and quantities necessary for the effort proposed? What is the basis of your determination?

Tech Eval Questions Cont.

- I) If the contractor has requested Government Furnished Property or Equipment (GFP or GFE) to perform the contract, is this property available? What is the impact if it is not provided?
- J) For the purpose of calculating fee (or profit), what is the technical and schedule risk associated with this program? (Explain)
- K) Are any clarifications required? Were any deficiencies discovered? (Explain)
- L) Do you have any issues with any of the assumptions presented by the company? What/Why? (Explain)
- M) Based on the above questions and any additional insight you may have, what is your overall assessment of this proposal?

Sample Task Estimate

WBS CATEGORY	TASK	ESTIMATE
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1.1.2.1	Develop software for new Trainer SR Programmer	27,875 HRS
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Fact-finding Question Tree

- Q: How Was Estimate of 27,875 Hrs Derived?
A: It Was Based on 11,150 Loc (Lines of Code) @ 2.50 Hrs Per LOC
- Q: What Is the Basis for the Number of LOC?
A: There Are 9,900 LOC in the Existing Trainer. The New Trainer Will Need 1,250 Additional LOC to Handle the Increased Capabilities of the New Trainer.
- Q: Will the Existing Code Be Scrapped and Replaced by New Code?
A: No, Some Existing Code Will Be Modified but a Significant Amount of New Code Will Also Be Needed.
- Q: How Many New Vs Modified LOC in the 11,150 Total?
A: The Estimate Is Based on 7,250 New and 3,900 Modified LOC.

Fact-finding Question Tree Continued

- Q: Was the 2.50 Hrs Per LOC Applied to All LOC?
A: Yes
- Q: What Is the 2.50 Hrs Per LOC Based on?
A: It Is Based on Experience From Other Programs.
- Q: What Specific Programs Were Used?
A: Experience From the “Have-Bucks” Program and the “Need-More” Follow-on Program Was Used.

Fact-finding Question Tree Continued

- Q: Please Provide the Data From Those Programs That Supports the 2.50 Hrs/LOC Metric.

A:

<u>PROGRAM</u>	<u>LOC</u>	<u>HOURS</u>	<u>HRS/LOC</u>
HAVE-BUCKS	50,000	134,000	
NEED-MORE	<u>12,000</u>	<u>21,000</u>	
TOTAL	62,000	155,000	2.50*

*155,000 HRS / 62,000 LOC = 2.50 HRS PER LOC

Fact-finding Question Tree

Continued

- Q: How Many New & Modified LOC Were in Each Program?

A: Have-Bucks Program Had 50,000 New Loc,
NEED-MORE Program Had 8,000 New &
4,000 Modified.

*Based on This Last Answer , the Need-More
Program Looks More Like Ours. We Need to
Re-look at the Data Used by the Contractor.*

Fact-finding Question Tree Answered

<u>PROGRAM</u>	<u>LOC</u>	<u>HOURS</u>
<u>AVG</u>		
HAVE-BUCKS	50,000	134,500
2.68		
NEED-MORE	<u>12,000</u>	<u>21,000</u>
1.75		
TOTAL	62,000	155,000
2.50		

**Since the Need-More Code Mix
Appears Closer to Our Task, the
1.75 Hrs/loc May Be the Right
Metric for Our Effort.**

❖ **Objective = 1.75 hours x 11,150 =
19,512.5 hours or 23,275**

Tech Eval Analysis

Understanding “Averages”

- Use of an “Average” *Sounds* Reasonable but May Not Be.
- Examine the Data That Average Was Based on
 - Is Data Consistent With Proposed Effort (“Apples to Apples”) ?
 - Is Data Accurate and Complete?
 - Wide Variation in Data Points?
 - What Does Most Current Trend Show?
- We Are Concerned With Cost of Our Specific Effort
- Not Average

Tech Eval Analysis

Using Averages

“Our Estimate for Units 8 and 9 Is Based on Our Cum to Date Average of 70K Hrs Per Unit.”

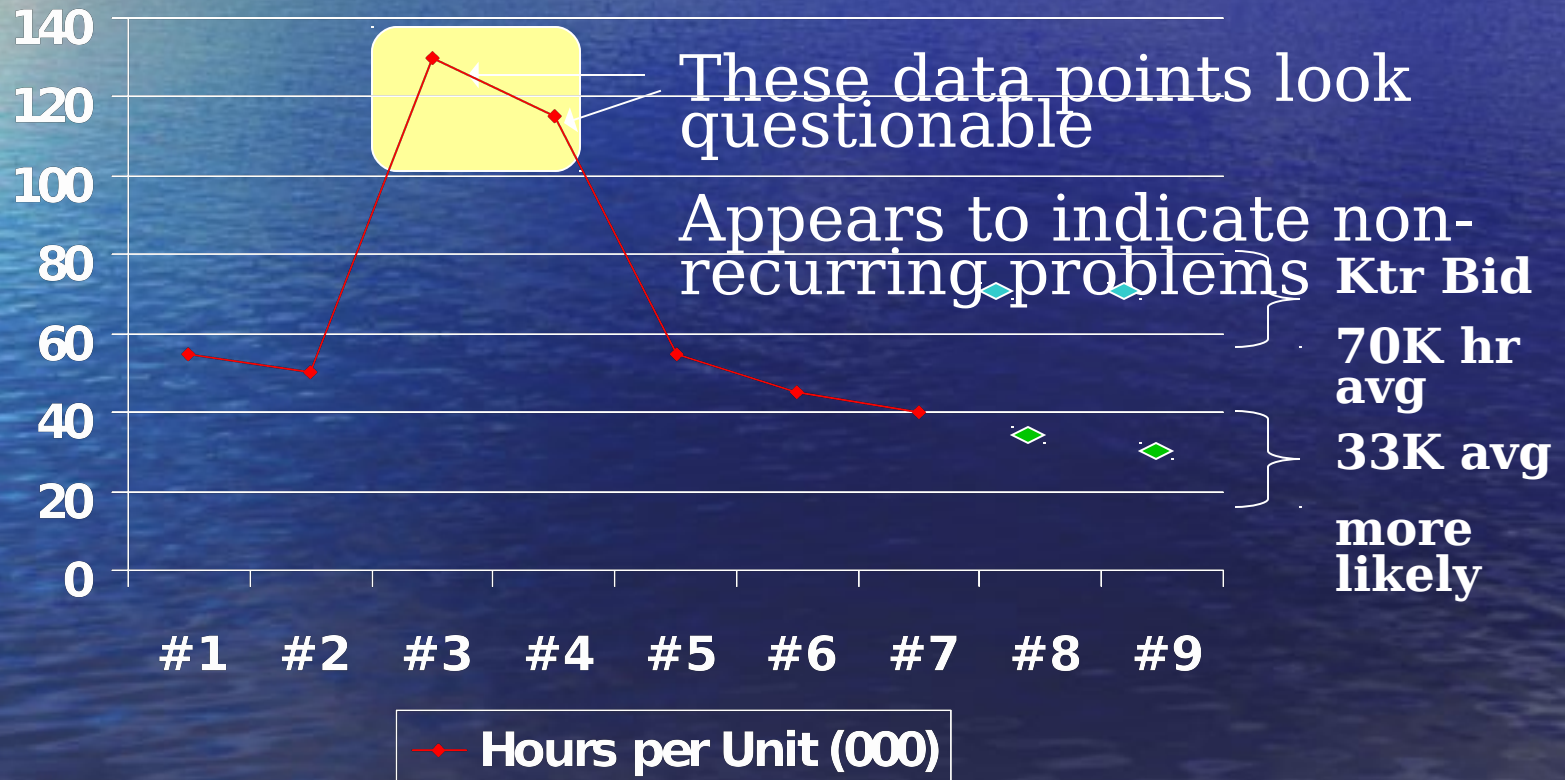
490K Hours / 7 units = 70K hours per unit

	<u>Case</u>	<u>Case</u>	<u>Case</u>
	<u># 1</u>	<u># 2</u>	<u># 3</u>
Unit #1	72	55	30
Unit #2	70	50	90
Unit #3	68	130	80
Unit #4	70	115	70
Unit #5	71	55	60
Unit #6	69	45	50
Unit #7	<u>70</u>	<u>40</u>	<u>40</u>
Total	490	490	490
Avg	70	70	70

Tech Eval Analysis

Understanding Averages

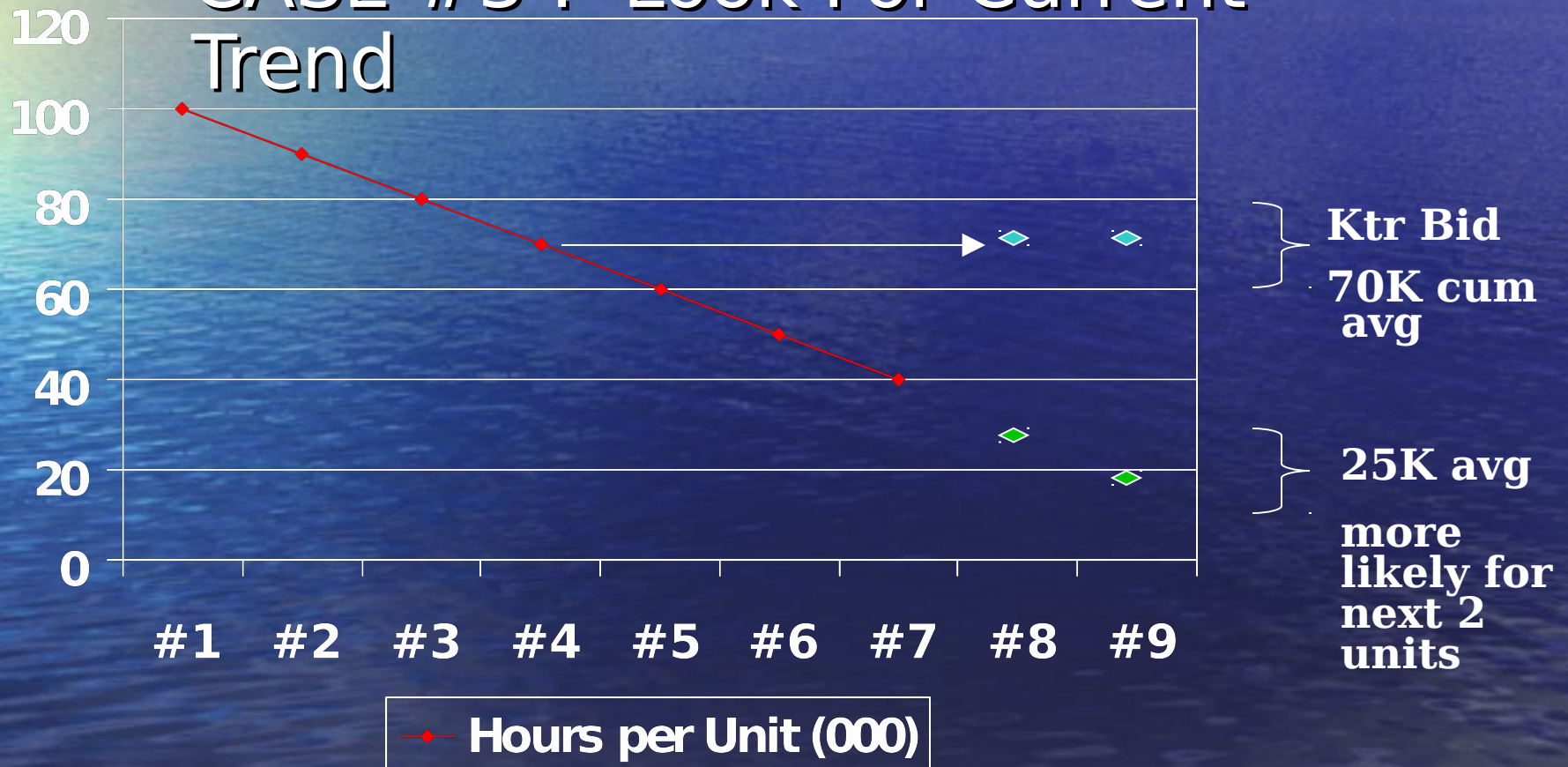
- CASE #2: Bad Data Points Included



Tech Eval Analysis

Understanding Averages

- CASE #3 : Look For Current Trend



Tech Eval Analysis

Understanding CERs

- Contractor Use of **Valid** Cost Estimating Relationships (CERs) Is **Encouraged**.
 - E.G.
 - Hours Per Loc / Drawing / Document / Page
- Qualities of Valid CERs :
 - Logical **Cause & Effect** Relationship Between the Variables
 - Based on Reliable, **Historical** Data (**Actuals**)
 - Kept **Current** Based on Latest Data, Changes in Methodology / Technology.
 - Proven **Reliability** (Actuals vs Estimate - **Good Predictor**)
- CER Analysis/validation responsibility of DCAA/DCMA

Tech Eval Analysis...Understanding CERs

Things to Beware of:

- Old CERs (“We’ve Been Using These for Years”)
 - **Things Change, Are They Still Valid?**
- New CERs (“We Developed These Just for Your Program”)
 - **Based on What? Can They Be Verified?**
- Adjusted CERs (“This Job Is Much Tougher”)
 - Complexity factor
 - Added Discrete
 - **Is It Really? Examine Jobs That Generated Unadjusted CERs, Consult DCMA**
- Discrete Bid in Lieu of CER
 - **Find out why CER is not applicable and consult DCMA**

Tech Eval Analysis

Manpower Analysis

Test for Reasonableness:

Sometimes the Sum of the Parts Is Greater Than the Whole Should Be.

Example: XYZ Program, 24 Month Period of Performance

182,500 Hours = 1,217 man-months

Proposed

150 Hrs per Month

1,217 man-

months

24 months

= **51 Equiv Full Time
People for Life of
Program**

Sanity Check: Can I Really Envision 51 People Working Full Time on This (and Only This) Program for 24 Months?

Tech Eval Analysis

Manloaded

Estimates

- Manloaded Estimates Are Very Common and Usually Poorly Supported.
- Beware of “Motherhood” Type Language Such As *Monitor, Coordinate, Interface* or *Support*.
 - **Ask the Contractor What Specific Tasks Need to Be Done.**
- Don’t Fall for the “*It’s Not Really a Full Time Task but I Can’t Hire a Half-person*” Argument.
 - **Someone Not Working a Full-time Task Will Usually Do Another Task That May Have Also Been Bid As a Full-time Task.**
- Try to Make the Contractor Be Specific. For Example: If a Task Is for “Problem Resolution”:
 - **How Many Problems a Day, Week, Month, Etc. Are Assumed to Be Reflected in the Estimate?**

Tech Eval Analysis

Skill Mix

- Beware of Contractors Bidding Higher Skill Levels Than Are Needed to Do the Job.
 - Just Because They Propose Senior People Doesn't Mean They Will Use Senior People. They Can Use Whoever They Choose Once On Contract.
- Questions to Ask:
 - How Does Proposed Skill Mix Compare With Company-wide Skill Mix?
 - If It Is Top Heavy, Why? Is This Effort More Complex Than Most Other Work in the Company?

Tech Eval Analysis....Judgmental Estimates

- All Estimates Involve Some Judgment.
- *“Professional Judgment”* Is Not, in Itself, an Adequate Basis of Estimate. *Neither is XX Years Experience.*
- Make the Contractor Fully Explain How Judgment Resulted in the Hours Proposed.
- What Assumptions Are Inherent in the Estimate:
 - What Specific Experience Was Relied Upon?
 - Did Estimator Make Adjustments for Complexity, Schedule Etc.? If So, How?
 - Make Contractor Be Specific (Quantify)
- IDEALLY, TRY TO FORCE THE USE OF SUPPORTABLE DATA. THERE IS NO SUCH THING AS “NEW” ITEM.

Tech Eval Analysis

Unsupported

If the contractor fails to provide **adequate support** for a task, and agreement on BOE is not reached:

- The Going-in position should be based on **what the contractor has justified** during fact-finding.
 - **Zero-out** if no support was given
- The Objective position should be based on “what should it take to do this task assuming that normal problems develop”
 - **Zero-out** task only if :
 - It is not a valid task, or
 - It is duplicated by another task bid elsewhere in the proposal.

TECHNICAL EVALUATION SUMMARY

- *IF, AFTER YOUR
EVALUATION AND
ANALYSIS THE ESTIMATE
DOES NOT SEEM RIGHT
TO YOU, SOMETHING IS
PROBABLY WRONG*

Documentati on

✓ Body of tech eval should contain evaluation sheets of all tasks

- Each task evaluation contains:
 - Track to cost proposal, wbs, sow
 - Name/Phone # of Evaluator
 - Basis of contractor's estimate
 - Basis of air force objective position
 - Basis of air force going-in position

✓ Consolidation

- ✓ Tech Eval should be summarized to appropriate level
 - Coordinate with price analyst/Buyer/CO
- ✓ Synopsis of each area should be prepared by team leader
 - Major issues summarized
 - Contractor vs Air Force (Numbers & Rationale)



Examples

Example Of Outcome

TECHNICAL EVALUATION MODEL

SUMMARY TECHNICAL EVALUATION (ALL DIRECT LABOR FUNCTIONS)

<u>COST ELEMENT</u>	<u>PROPOSED</u>	<u>AF LOW</u>	<u>AF OBJ</u>
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LABOR HOURS

ENGINEERING	63,805	57,660	59,220
ENGR-PLANNING	500	400	450
ENGR OFFSITE	7,500	6,000	6,750
FAB AND ASSY	28,000	27,000	27,500
TEST	12,000	11,500	11,750
TOOLING	1,000	650	750

ENGINEERING TECHNICAL EVALUATION

		Task Description	PROPOSED	AF LOW	AF OBJ	NOTES
Proposal						
Page No	WBS	Engineering Labor				
20	4110	- Sys Integration	24,520	23,500	24,000	
25	4210	- SubsystemA	2,023	1,510	1,873	
30	4310	- SubsystemB	2,875	2,875	2,875	
35	4410	- SubsystemC	7,427	7,137	7,137	
40	4031	- Oper Analysis	6,718	5,021	5,718	
45	4064	- Project Management	20,242	17,617	17,617	
Total Engineering Labor			63,805	57,660	59,220	

ENGINEERING TECHNICAL EVALUATION...SubsystemA

		Task Description	PROPOSED	AF LOW	AF OBJ	NOTES
Proposal Page No	WBS	SubsystemA				
26	4210.1-	Task AAC, Com Link SW	1,060	1,060	1,060	
27	4210.2-	Task xxx	600	450	450	
28	4210.3-	Task xxx	363	0	363	
Total SubsystemA			2,023	1,510	1,873	

Task Evaluation Documentation Agreed to Estimate (Inadequate)



TASK: AAC

TASK DESCRIPTION: COMM LINK SOFTWARE

WBS 4210.1

SOW REF: 12.2.1

PAGE: 26

GROUP: SOFTWARE

PERIOD OF PERFORMANCE: 6/04 - 6/05

BUDGET CODE: SE1 (SR S/W DEVELOPER)

BASIS OF ESTIMATE:

1060 HRS Per Government / Contractor IPT
agreement.

Task Evaluation Documentation

Agreed to Estimate (Adequate)

TASK: AAC

TASK DESCRIPTION: COMM LINK SOFTWARE

WBS 4210.1

SOW REF: 12.2.1

PAGE 26

GROUP: SOFTWARE

PERIOD OF PERFORMANCE: 6/04 - 6/05

LABOR CATEGORY: SE1 (SR S/W DEVELOPER)



BASIS OF ESTIMATE:

Current Comm Link software modules contain 320 lines of code (LOC) . 100 LOC will be useable, as is. Adding new functionality will require modification of 100 lines of code and an additional 220 LOC. Based on CERs derived from FSD experience (Contract F04701-x-xxxx) the estimate for design, integration and test is:

MODIFIED CODE: $100 \text{ LOC} \times 1.8 \text{ HRS PER LOC} = 180 \text{ HOURS}$

NEW CODE: $220 \text{ LOC} \times 4.0 \text{ HRS PER LOC} = 880$

TOTAL ESTIMATE = 1060 HOURS SE1

Task Evaluation Documentation

Estimate Not Agreed To
(Inadequate)
DATE 16 Dec 92

PROPOSAL VOLUME: V, PART II
WBS 40xx.x

PAGE 5-7

GOING -IN POSITION:
Delete all Hours

OBJECTIVE POSITION:
28 Hours based on Judgment

EVALUATED BY: _____

PROG MGR COORDINATION _____
PCO/BUYER COORDINATION _____



What's Wrong?

**No proposed hours
identified**

**No description of KTR
task**

**No rationale for AF
positions**

Task Evaluation Documentation

Estimate Not Agreed To (Adequate)

PROPOSAL VOLUME: V, PART II PAGE 5-7 WBS

40XX.X

LABOR CATEGORY: ENGR SUPT

PROPOSED
OBJECTIVE

182
28

GOING-IN

0



BASIS OF PROPOSAL: CONTRACTOR BASED ESTIMATE ON THE FOLLOWING CERs DERIVED FROM FSD EXPERIENCE:

ICWG MTGS - 16 HRS PREP/ 24 HRS MTG/ 8 HRS FOLLOW-UP * 4 MTGS =192 HRS

GOING -IN POSITION: DELETE ALL HOURS. THIS GROUP HAS NEVER BEEN REPRESENTED AT PREVIOUS ICWG MTGS.

OBJECTIVE POSITION: ATTENDANCE AT 1 MTG MAY BE NECESSARY BUT FSD CERs ARE NOT APPLICABLE TO PRODUCTION. MTGS HAVE BEEN LASTING 2 DAYS WITH FEW ACTION ITEMS RESULTING. ALLOW 8 HRS PREP & 4 HRS FOLLOW-UP

8 HRS PREP/16 HRS MTG/4 HRS FOLLOW-UP * 1 MTG = 28 HRS

EVALUATED BY: _____

PROG MGR COORDINATION _____ PCO/BUYER COORDINATION _____

Negotiations

- Some Negotiations Take Place During IPT Fact-Finding Process
- Formal Negotiations Are Responsibility of PCO/Buyer and Price Analyst
- Either Way, Common Commercial Business Practice
- The “Negotiation” Relationship Is Almost Always Adversarial
 - But one can disagree without being disagreeable!
- Remember, a \$1 saved in negotiations is a \$1 that can be put back into the program, benefiting contractor and AF
- For Further Training, Reference Chester L. Karrass, Negotiating Game, Give & Take

IPT Lead Tips

- Take charge early
- Know your team members
- Coordinated review process
 - Meet often and share knowledge
 - Know tasks – especially where they cross
 - Prevent duplication
 - Ensure consistency
- **STAND BEHIND YOUR PEOPLE**

SUMMARY

- ***TWO CHARTS YOU'VE
ALREADY SEEN***

Government Pricing Policy

Per FAR 15.402:

Contracting Officers Shall --

(A) Purchase Supplies and Services
From Responsible Sources at ***Fair
and Reasonable Prices.***

***This Is the Basis for All Other
Pricing Related Regulations and
Policies.***

Note: There is no FAR Exception for Schedule

Government Pricing Policy ENFORCEMENT

- ***WE ARE STEWARDS OF THE TAXPAYER DOLLARS.***
- ***EVERY DOLLAR SAVED ON THE INSTANT NEGOTIATION CAN BE APPLIED TO ADDITIONAL CAPABILITIES***



QUESTIONS?